

Energy Management for K-12 Schools

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High Performance Sustainable Schools Workshop
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Creating an Energy Program



Getting Started

- Create a Sustainable Energy Plan
- Create an Energy Awareness Program
- Become an Energy Star partner
- Implement Action Plan

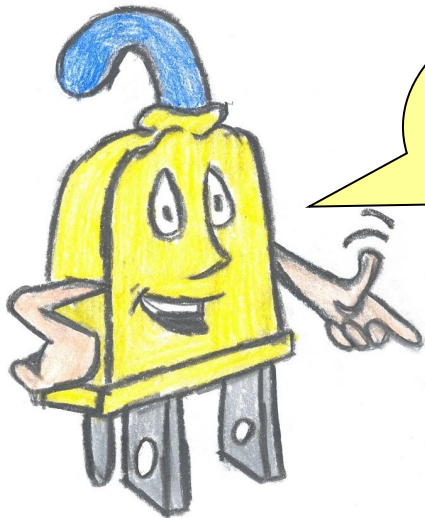
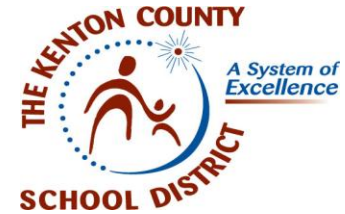
Sustainable Energy Plan

- **Executive Summary**
 - Summarize key components of plan
- **Baseline Energy Use**
 - Summarize energy usage, categorize facility types, compare facilities to averages and identify facilities with high/low usage
- **Planned Actions & Projects**
 - Identify targeted Actions and Projects
- **Savings Opportunity Assessment**
 - Assess savings opportunities for prioritized actions and projects
- **Financial Assessment**
 - Include the estimated value of actions and projects with payback evaluations and life cycle cost

Sustainable Energy Plan

- **Goals and Measures**
 - Establish specific goals and identify how results will be measured
- **Budget**
 - Establish budget to fund actions and projects
- **Mandate for Energy Management**
 - Recognize energy as a controllable cost
 - Essential for “Buy-in” from all parties involved
- **Appendices**
 - Baseline Energy Map with supporting baseline data
 - Rank schools by usage and cost
 - Make sure you include **Successes!**

Energy Awareness Program



*Energy
Conservation is
everyone's
responsibility!!!*

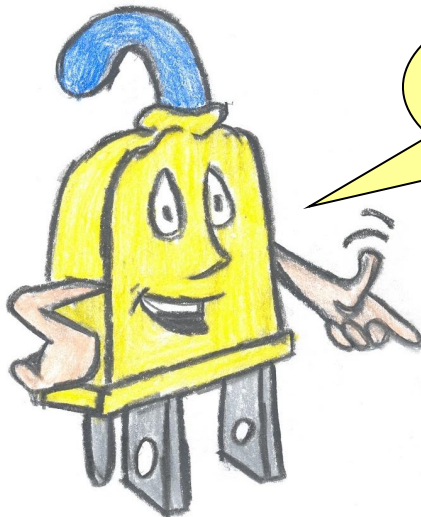
Plug Master



Energy conservation should be viewed as the responsibility of all staff, students, and vendors

- Include energy statements in all staff and vendor contracts
- Create posters, banners, etc.
- Create school energy report cards
- Include energy column in newsletters

Energy Awareness Program



*Changing
habits can save
5% or more!!!!*

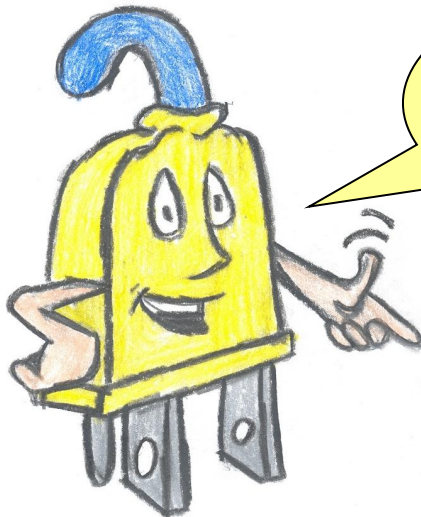
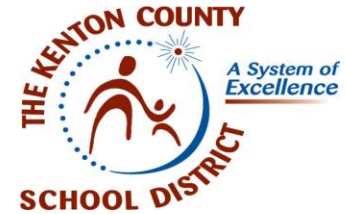
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Create student energy teams

- Teaching students to be life-long stewards of the environment
- Students teaching students and adults through real world connections
- Every building becomes a learning tool
- Students can earn recognition through NEED

Energy Awareness Program



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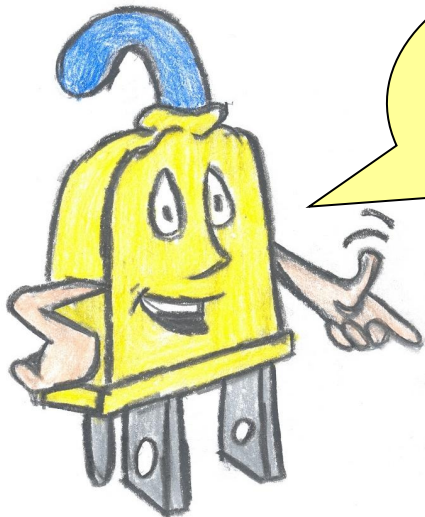
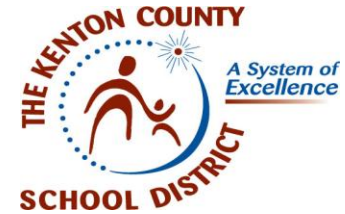
*I was the 1st
place winner in
the Mascot
contest!!!*



Create “Buy-in” and Make it Fun!!!

- Use a committee with representatives from administration, teachers, and building support staff.
- Create contests to keep people involved and excited.
- Develop an incentive program
- Provide recognition to schools and people

Energy Star



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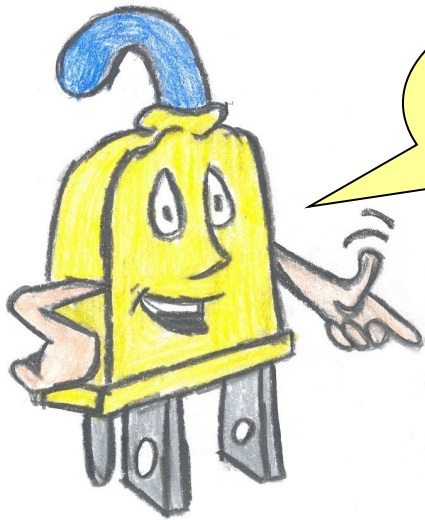
*Energy Star
provides tools
and resources
for Energy
Management*



Become an Energy Star Partner

- Energy Star provides resources, tools and recognition
 - Portfolio Manager
 - Target Finder
 - Energy Star Award for buildings
 - Energy Star Leaders program
 - Resources for public relations and press releases

Implement Action Plan



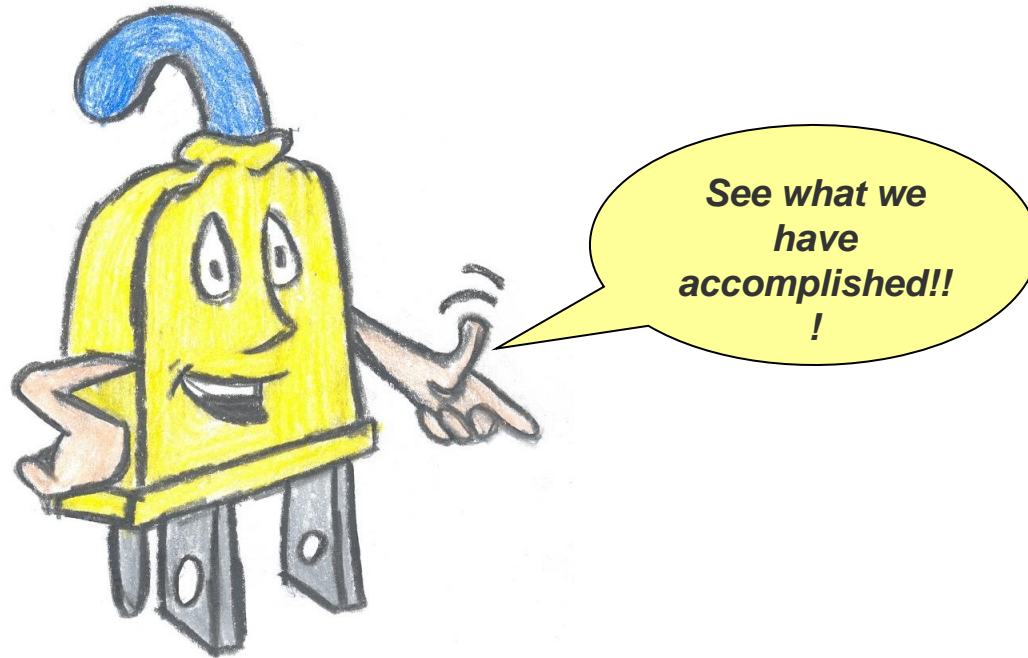
*Use your
project
management
skills!!*

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Implementing Actions from the Sustainable Energy Plan

- Prioritize projects
- Determine scope
- Assign responsibilities
- Develop a schedule
- Monitor and Measure
- Evaluate and report results

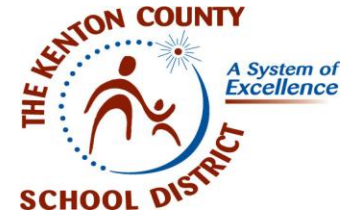
Successes



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Successes in High Performance Schools



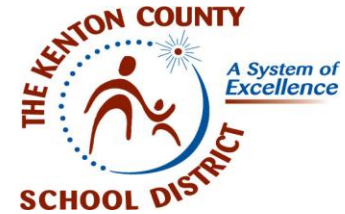
Caywood Elementary



Cost Summary (2005 – 2006 SY)

Avg. Cost/SF of Elementaries (not including Caywood)	\$1.31
Cost/Sf of Caywood Elementary	\$0.73
Cost/SF savings	\$0.58
% cost/sf savings	44.27%
Savings (.58 * 78849 sf)	\$45,732.42

Successes in High Performance Schools



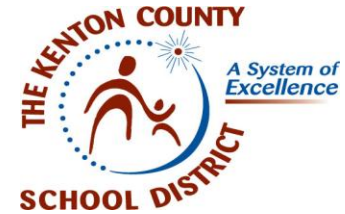
Caywood Elementary

Usage Summary

Avg. kBTU/SF of Elementaries	73.21
kBTU/Sf of Caywood Elementary	38.51
Kbtu/SF difference	34.70
% kBTU/sf difference	47.40%
Original Energy Star Rating 10/06	76
Current Energy Star Rating	81
*** 2006 – 2007 YTD Reduction of energy usage	11%



Successes in High Performance Schools



Twenhofel Middle Cost Summary (2006 Calendar Year)



Avg. Cost/SF of Middle Schools (not including Twenhofel)	\$1.28
Cost/Sf of Twenhofel Middle School	\$0.95
Cost/SF savings	\$0.33
% cost/sf savings	25.78%
Savings ($.29 * 112000$ sf)	\$32,480.00

Successes in High Performance Schools



Twenhofel Middle

Usage Summary

Avg. kBTU/SF of middle schools	69.31
kBTU/Sf of Twenhofel Middle	50.75
Kbtu/SF difference	18.56
% kBTU/sf difference	26.78%



Successes in Using No Cost Measures



Targeting Schools with DDC Systems

Limiting Setpoints, increasing heating offsets, controlling schedules

Year to Date Savings (SY 2006 – 2007)

- Ryland Heights Elem – 6.5% reduction in energy usage saving \$5,600
- Ft. Wright Elem – 7.5% reduction in energy usage saving \$6,800
- Piner Elem – 10.7% reduction in energy usage saving \$7,800
- Taylor Mill Elem – 11.2% reduction in energy usage saving \$15,900
- Simon Kenton H.S. – 14.6% reduction in energy usage saving \$41,900
- Dixie H.S. – 18.1% reduction in energy usage saving \$28,200

Total Savings = \$106,200

Successes in Using No Cost Measures



Electric Rate Reviews

Meet with local electric supplier to ensure facilities are on the correct rate structure

Year to Date Savings (SY 2006 – 2007)

- River Ridge Elem – 4.7% reduction in electric costs saving \$5,500
- Scott H.S. – 5.6% reduction in electric costs saving \$14,000
- Summit View Campus – 11% reduction in electric costs saving \$21,400

Total Savings = \$40,900

Successes in Using No Cost Measures



Natural Gas Suppliers

Solicit competitive bids from natural gas suppliers for high gas usage facilities

Estimated Annual Savings

- Summit View Campus - \$17,700
- Dixie H.S. - \$21,700
- Simon Kenton H.S. - \$27,900

Total Savings = \$67,300

Resources



- Ky NEED Project – www.need.org
- Energy Star – www.energystar.gov
- Governor's Office of Energy Policy – energy.ky.gov
- GEM Management Consultants, Inc., Dave Mahoney – Creating an Effective & Sustainable Energy Plan
- Montgomery County Public Schools – SERT program
- Poudre School District Sustainable Guidelines

